

Nasogastric Tube Feeding at Home



A Guide for
Families
and
Caregivers



**CHILDREN'S & WOMEN'S HEALTH
CENTRE OF BRITISH COLUMBIA**

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The practices of nutrition support are continually evolving with new knowledge and guidelines from expert authorities. This booklet is being published with the aim of providing guidelines for tube feeding that are consistent with the most recent scientific data. Where research is not available, the practice guidelines are the best as derived from the collective experience of the health professionals at Children's and Women's Health Centre.

The development of these guidelines involved thorough and repeated review by health professionals at Children's and Women's Health Centre in the fields of neonatology, pediatrics, nursing, infectious disease, nutrition and public health. The input of these professions has been invaluable and we are most grateful for their assistance.

The publisher is not responsible (as a matter of product liability, negligence, or otherwise) for any injury resulting from any material contained herein. This booklet contains information relating to general principles of medical care and should not be construed as specific instructions for individual patients. Product information and package inserts provided by the manufacturer should be reviewed for current information including contraindications, dosages and precautions.

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Dr. Sheila Innis, Chair
Nutrition Committee
Children's and Women's Health Centre of BC

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Introduction: What is Tube Feeding?



Tube feeding is a way of giving liquid food (often formula) directly into the stomach or small bowel. This formula provides the body with the nutrients needed for good health. Tube feeding can be used for children who:

- Cannot eat at all
- Do not feel hungry
- Need extra nutrients – higher amounts of protein and calories
- Cannot eat or drink enough regular food or fluids because they tire easily or cannot chew or swallow

Right now, you might feel quite overwhelmed by the idea of tube feeding at home. Please know that we will teach you what you need to know before you go home with your child and you will practice your new skills before going home. Please ask any questions or discuss any of your concerns with us. There is no such thing as a silly question!

**Please discuss
any questions
or concerns
with us.**

The information in this booklet will help you to complete tube feeding at home. Please feel free to write notes or questions in it. It might also be helpful if you bring this booklet to your appointments.



The Digestive System

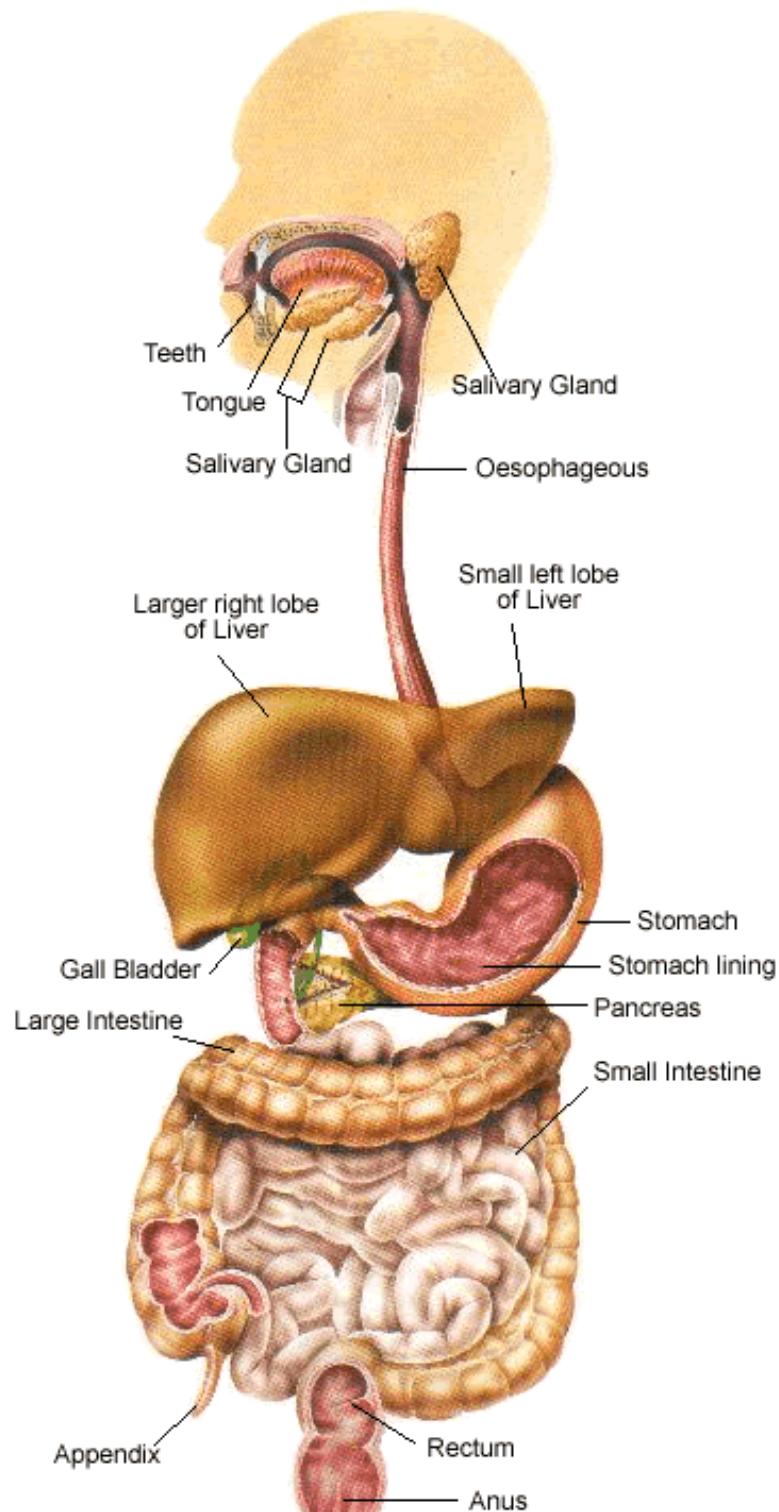


Figure 1: The Digestive System

Nasogastric Tubes

A nasogastric tube (NG tube) is a small soft tube that is passed through the nose, down the throat and into your child's stomach (See Figure 2 and Figure 3). For some children, this tube may be passed through the mouth instead of the nose. The food and fluids go through this tube into the stomach

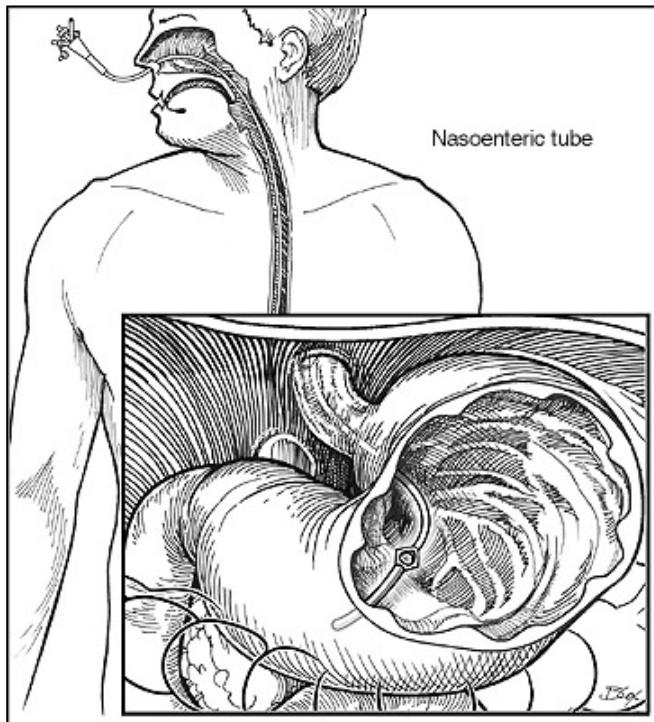


Figure 2: Nasoenteric Feeding

- There are many different types of NG tubes used (see picture right). The tube chosen depends on the needs of the child. All of the tubes are soft and flexible with rounded tips so that they are comfortable inside the body.



Figure 3: NG Tubes

Information about your child's feeding tube

Write your
child's
information
here.

Keep this page
for your records.

1. Tube type and brand:

2. Tube size:

3. Health care provider that inserted the tube:

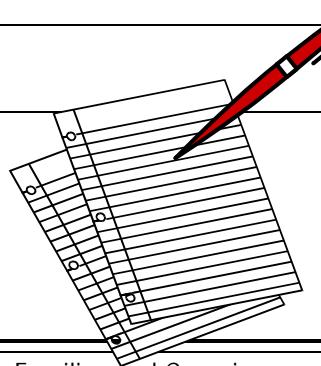
4. Date the tube was inserted:

5. NG Tube inserted to ml marking at nose:

6. Date when tube should be changed:

7. Where to go to have the tube changed and who can change it:

8. Other details:



Inserting the Nasogastric Tube



Inserting a feeding tube may be a bit scary, but it is not hard to learn how. Many older children prefer to put in their own tube.

The following instructions are for those who have been taught to insert their child's nasogastric tube.

Start Clean! Clean hands, clean supplies, clean workspace!

Step 1 Prepare and clean work area, and wash your hands! Washing your hands can prevent the spread of illness! Washing your hands is one of the most important steps you can take when caring for your child's tube feed.



When washing your hands please make sure you:



- Remove rings and watch. These can trap germs.
- Use warm water and regular soap and rub all parts of your hands and wrists. Friction is the best way to get rid of harmful germs.
- **Wash for 30 seconds.** Hint: Sing "Happy Birthday to You" (the whole song) and 30 seconds will have passed.
- Rinse well. Leave the taps running and dry your hands with a clean towel.
- Turn off the taps with the towel.



Step 2 Gather the equipment:

- NG tube
- Syringe
- Non-allergic tape – pieces of tape ready to be put on your child's face
- Water-based lubricant
- Glass of water with a straw or a soother - depending on your child's age
- pH paper
- tissue to clean nostril
- feeding tube



Wash your hands again before touching equipment or your child!

Step 3 Prepare the NG tube:

- a) Check the NG tube for cracks, leaks or blockage. You can test the tube by attaching a syringe filled with water and flushing the water through the tube looking for leaks along the tube. Throw away any damaged tubes.
- b) Measure and mark the NG tube. If the tube has a weighted end, **do not include the weight in the measurement**. Each time you put in the NG tube you will measure the distance from the nose to the stomach using the mark on the NG tube.
 - Place the end of the tube on the tip of the nose and measure to the ear lobe and then to the midpoint between the sternum (breastbone) and the umbilicus (belly button).
 - Place a piece of tape around the tube to mark the length or mark with a pen. (Once you insert the tube, this piece of tape/or mark of the pen will be at the nostril and the tip of the tube will be in the stomach.)
- c) Coat the end of the NG tube with water-based lubricant.

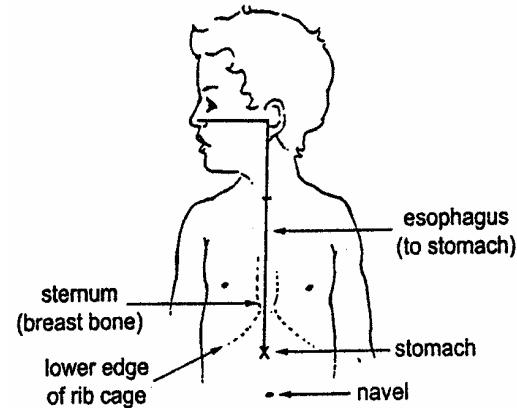


Figure 4: Measuring NG Tube

Step 4 Prepare your child:



a) For babies:



Babies

- Giving a soother may help keep your baby calmer.
- Bundle your baby in a blanket and lie the baby on their back. Keep your baby's head in a neutral position (*Figure 5 & 6*)
- Check the baby's nostril. If the nose is plugged, try to gently clean it with a moist cotton tip applicator or cotton swab or normal saline drops and a bulb syringe.

b) For older children:

- Have your child gently blow his or her nose to clear the nasal passages. If there is thick mucous in the child's nose, you may need to clean it with a moist cotton-tipped applicator, cotton swab or bulb syringe.
- If your child is allowed to drink by mouth, give him or her some ice to suck on before the tube is put in. This will numb and moisten the throat.
- Avoid over extending your child's head and neck (*refer to Figure 5 & 6*). This can make it more difficult to pass the NG tube by the bridge of the nose.



Older
children

Step 5 Insert the tube:

- a) You may find it easier to insert the tube if your child is sitting up with someone else holding your child while you insert the tube.
- b) Insert the feeding tube into the child's nose. Tilt the child's head forward to help the tube go down. For small children and babies, the tube will slide in much easier if their head is kept in a neutral position rather than arching back (*refer to Figure 5 & 6*). Lay smaller children or babies on their right side or back with their upper bodies and heads propped at a 30° angle (*Figure 6*). Sometimes the insertion is easier if someone else holds your child while you insert the tube. If the tube curls in the mouth, don't be alarmed, just pull the tube out and start again

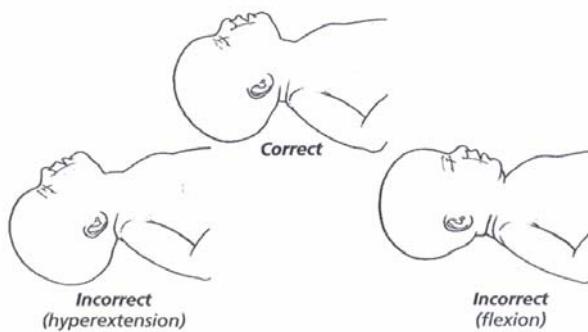


Figure 5: Correct Head placement

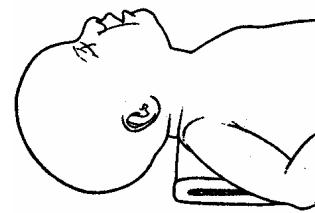


Figure 6: Head propped at 30° Angle

- c) Keep the head straight and gently insert the tube along the base of the nostril using a slight twisting motion.
- Swallowing helps move the tube down to the stomach. Advance the tube when your child swallows. Stroking under the chin or giving a soother may also help babies to swallow. If oral fluids are allowed, older children may take sips of water through a straw to help the tube to go down.
- If you are not able to move the tube forward, **do not force**. Pull back slightly and try to insert the tube again. Rotating or turning the tube gently may help. Next time, you may try and add more lubrication to the end of the tube prior to insertion.
- **If your child has any trouble breathing, remove the tube right away as it may have entered the airway or lungs.**
- It is common for children to gag, cough and make choking sounds as the tube passes down the back of the throat. Take time to calm and comfort your child, and once they are calmer continue to gently insert the tube. Older children find it helpful to try slow breathing, and babies will calm by sucking on a soother.

- d) When the tape marker or pen mark reaches the nostril, the tip of the tube should be in the stomach.
- e) Tape the tube in place (can be taped to the nose or cheek).
- f) For safety, keep all tubing away from your child's neck by putting the feeding tube down your child's pant leg or sleeper. It is also a good idea to place the feeding set at the foot of the bed.
- g) Check the placement of the tube.
- h) Because the nose is sensitive, sometimes it will bleed a bit. For the next insertion, change to the other nostril and use a water soluble lubricant.

Checking the Proper Placement of the NG Tube

GENERAL INFORMATION:

- The placement of the tube is checked to make sure that the tube is in the stomach and not in the lungs. If possible, wait at least 1 hour after feedings or medications before doing the pH testing (See **Step 2** below). Check placement if you are feeding continuous feeds when the feeding bag is changed.
- The tube must be checked:
 - **Before** you use the tube for each feeding and any time you flush the tube or give medications
 - **After** you insert the tube
 - **After** coughing, choking, throwing up, gagging or blowing the nose
 - **After** periods of physical activity.

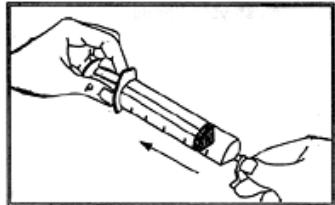
HOW TO CHECK TUBE PLACEMENT:

You may need to use more than one method to check the tube placement.

Step 1 Check the tape marker on the tube.

- **If the marker is at the nostril**, go to **Step 2**.
- **If the marker has moved into the nostril**, un-tape the tube and pull it out until the marker is at the nostril. Tape the tube.
- **If the tape marker has fallen off**, or been rubbed off, measure another tube and compare this measurement from nostril to the end of the tube in your child (*see Page 8*). Decide where the tape marker should be, then mark the tube again. Or, if you have been taught, you could remove the tube and insert it again.
- **If the marker has moved away from the nostril and the tube has come partway out**, gently push the tube in until the marker is at the nostril. Tape the tube.





- Step 2** With a syringe, push 2 – 5 mls of air into the tube to clear the tube. Using the same syringe, gently withdraw fluids from the stomach.^{16,17}

- Stomach fluids may appear grassy green, tan to off-white (mixed with formula), brown, clear and colourless, or mixed with mucous.
- In tiny babies, pH testing may not always be accurate. Check with your health care provider about pH testing.
- Many factors can affect stomach pH:
 - Continuous feeds
 - Delayed stomach emptying
 - Certain medications
- Put a few drops of this fluid on the pH paper. **If the pH paper reads 4 or below, the fluid is acidic and the tube is in the stomach.**^{16,17,19}



You are now ready to start
feeding your child.

- Silicone tubes and small tubes (#10 and smaller), often flatten with the pressure created when you try to withdraw fluids. This does not harm the tube but it does prevent the removal of fluids from the stomach. The tube returns to normal once the syringe is removed. Try testing again by pushing 2 mls of air into the tube before trying to withdraw fluid.
- If you are not able to withdraw any stomach fluids, recheck the tube position, and change the child's position – try sitting upright, lying on the right or left side, or laying flat.

- **DO NOT GIVE A FEEDING** if you are not sure that the NG tube is in the stomach or if the pH is greater than 4.
- **DO NOT GIVE A FEEDING** if your child has problems breathing or speaking, has a distended stomach, is crying or complains of pain.
- Contact the nurse or primary health care doctor to arrange checking of the tube.



Removing the Nasogastric Tube

- Step 1** Hold your child in the same position as for tube insertion.
- Step 2** Unhook the NG tube from the feeding tubing. Flush the NG tube with ml of water.
- Step 3** Close the cap on the feeding tube or pinch the NG tube with your fingers to prevent fluid leaking out when removing it.
- Step 4** Pull the feeding tube out with a quick, steady motion.
- Step 5** If you plan to use the NG tube again, wash the tube. Follow the steps for cleaning on *page 26*.

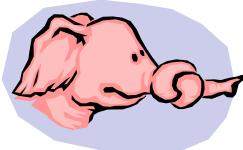
Care of Nasogastric Tube Site

GENERAL INFORMATION:

- Infants and children with nasogastric tubes do not need to be limited in their daily activities. They can have a bath, go swimming and play just as other children do. However, sometimes these activities may cause the tube to be dislodged and move out of the stomach. **Therefore, you need to ensure that the tube is taped well at all times.**
- If the nasogastric tube does move out of the correct position and fluids or food are given, it can be harmful to your child. Therefore, it is essential that the correct position of tube be checked before each feeding or before giving any fluids or medications. See *page 10* for directions on how to check the position of the tube.



CARING FOR THE SKIN AND NOSE:



- Keep the skin of your child's cheeks as clean and dry as you can to help prevent redness or breakdown on the skin. If any redness is noted, change the placement of the tape.
- Clean the nostril around the tube at least twice a day with a cotton-tipped applicator (Q-tip) moistened with warm water. Dry well after. If the area appears dry and scaly, apply a small amount of Vaseline.
- If there is any irritation or bleeding in the nostril, change the tube to the other nostril.



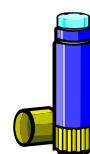
CARING FOR THE MOUTH

- Brush your child's teeth at least twice a day. If the child is able, he or she can do it.



- Rinse your child's mouth with water, mouthwash, or cloth **4 to 6 times a day**.

toothette



- Put a lip moisturizer on the lips to keep them moist.

- To help make saliva flow and keep the mouth clean and moist, a toothette¹, Gum Stimulator set, hand or a soother may be used.

¹ Toothettes should not be used with children who have a strong bite reflex.

Oral Stimulation During Tube Feeding

For children who cannot eat or drink by mouth, tube feeding does not mean the end of pleasures associated with eating. Some children are able to take small amounts of food.

It is easier to increase oral feeding than to completely restart it. Oral-motor stimulation can be nutritive (with tastes) or non-nutritive. Your doctor can tell you which is best for your child. Including an oral-motor stimulation program at daily mealtimes will help create a positive approach.

Extended periods of tube feeding can contribute to reduced oral-motor skills. Unpleasant procedures and experiences may result in oral aversion (hypersensitivity and defensiveness around the face and mouth).



General Principles Of Oral-Motor Stimulation

1. It should be fun and enjoyable for child and caregiver.
2. Incorporate into regular play times and during tube feeds.
3. If child does not tolerate or becomes stressed, stop and try again later at a level of stimulation that s/he likes and slowly work at progressing stimulation.

PLEASE USE THE FOLLOWING AS A GUIDE TO HELP YOUR CHILD:

Non-nutritive Oral-Motor Stimulation

1. Pleasant touch around mouth area i.e. Cotton balls, terry cloth, soft toothbrush, soft toys.
2. Explore shapes and textures such as teething toys, own hands, nipples and spoon, especially shapes that your child will eventually use to feed with.
3. Massage should be firm but gentle on the upper body and face.
4. During tube feeding times, encourage your infant to suck on a pre-pumped breast or soother.

Nutritive Oral-Motor Stimulation

1. Offer tastes of a variety of suitable foods/liquids. Some children enjoy strong flavors.
2. Dip soother, infant spoon or teething ring into milk or purees for child to taste.
3. Rub lips and gums with small amounts of food/liquid then place some centrally on tongue to encourage sucking or tasting.

Sensory
stimulation is
also an
important part
of a tube
feeding.

Transition From Tube To Oral Feeds

GENERAL INFORMATION:

- It is very important that the child who is going to be moving from only having tube feedings to oral feeds learn how to eat safely. The transition from feeding a child through a tube to oral feeding is a process that usually requires planning and support.
- First, an experienced occupational therapist and/or speech-language pathologist should assess a child's eating and swallowing skills.
- Once a child is starting to eat, a nurse and/or dietitian will provide support to ensure that the process is going smoothly.
- This is a very individual process and needs careful assessment and planning. If an occupational therapist or speech-language pathologist does not follow your child, request a referral from the primary health care doctor before starting to feed your child by mouth.

This is a very individual process and needs careful assessment and planning.

READINESS FACTORS TO CONSIDER PRIOR TO MAKING THE TRANSITION FROM TUBE TO ORAL FEEDING:

1. The medical conditions(s) that resulted in tube feeding should be resolved or stabilized.
2. Can your child eat safely and in a reasonable length of time?
Indications of an unsafe swallow may include:
 - Inability to handle saliva/secretions
 - Noisy, wet sounding breathing
 - Multiple swallows to clear food
 - Frequent unexplained respiratory illnesses
 - Coughing/choking while eating or drinking
 - Changes in their breathing while eating or drinking
E.g. Stops breathing, oxygen saturation changes, color changes
3. Nutritional readiness
 - Can your child tolerate intermittent feeds?
 - Is there sufficient weight gain to tolerate a possible small loss while transitioning?
4. Behavioral readiness
 - Is your child showing hunger cues?
 - Is your child showing an interest in food?
5. Social factors
 - Caregiver would need motivation, skills, time and support for successful transition from tube to oral feeding

Tube Feeding Schedules: Intermittent and Continuous

Different types of feeding schedules.

There are different types of feeding schedules used. Your schedule will depend on the child's nutritional needs as well as life style.

When the feeding tube is first put in, it is common for tube feedings to begin as a slower continuous feed to help the body get used to the formula then move to an intermittent feeding schedule.

The feeding schedule chosen depends on your child's nutritional needs as well as lifestyle.

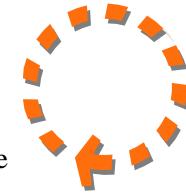
Intermittent Feedings



Intermittent feedings, sometimes called bolus feedings, are tube feedings given over short periods of time several times throughout the day. These feedings can be given by a pump or by gravity.

The timing of the tube feedings can be changed to allow 2 – 3 hours between the end of one feed and the start of the next feed to allow time for the stomach to empty. Intermittent feedings resemble the normal pattern of eating and digestion.

Continuous Tube Feedings



Continuous feedings are given at a steady rate, for as many hours as needed, over a 24-hour period to provide the energy and nutrition required. A pump will be used to control the steady rate of these tube feedings.

A tube feeding into the jejunum tube is usually given at a slow continuous rate because unlike the stomach, the small bowel is not able to hold large amounts of formula. In certain situations, tube feeding into the stomach may also be given as a continuous feed.

Combined Intermittent (bolus) and Continuous Tube Feedings

Sometimes, bolus tube feeds are given during the day, and continuous tube feeds are given at night.

Tube Feeding Formula

There are more than 80 types of formula products available. The dietitian will discuss with you the best type of formula for your child.

The health care team will discuss with you the best type of formula for your child.

Infants (0 - 12 months)

An infant under a year of age will usually receive expressed breast milk and/or infant formula for the tube feeding.



Children (1 – 10 years old)

A child will usually receive a pediatric formula that is made to meet the specific nutrient needs of this age group.



Older children (over 10 years of age) and adults



Both the older child and adult will usually receive a formula that is made to meet the specific needs of this age group. As needed, the dietitian may recommend the addition of vitamins and/or minerals to the formula.

Information about your child's tube feeding supplies

1. Tube feeding formula:	Write your child's information here.
2. Alternate formula:	Keep this page for your records.
3. The brand, type and size of feeding bag and tubing to use:	
4. Syringes	
5. Date for replacement:	
6. If used, the brand of the pump:	
7. The formula and feeding bags can be obtained from: <input type="checkbox"/> At Home Program <input type="checkbox"/> Medical Supply Companies such as: _____ <input type="checkbox"/> Home Enteral Nutrition Program	
8 Other details:	

Supplies can be purchased from:

The Special Products Distribution Centre
Room A109
Children's & Women's Health Center of BC
4500 Oak Street
Vancouver, B.C. V6H 3N1
Telephone: 604-875-3020
Toll Free: 1-866-727-7759



**Write your
child's
information
here.**

Tube Feeding Schedule: *Intermittent (Bolus) Feeding*

Keep this page for
your records.

Date:	Name:		
1. Formula:	Size:	(i.e. ml)	= containers/cans
Formula:	Size:	(i.e. ml)	= containers/cans
Formula provides:	Kcalories	grams of protein/day	ml of free fluid/day
2. Number of tube feedings each day:			
3. Amount of formula at each feeding: <i>(see Feeding Schedule next page)</i>			
4. Amount of water flush before each feeding: <i>(use syringe to flush tube)</i>			
5. Amount of water flush after each feeding: <i>(use syringe to flush tube)</i>			
6. Give each feeding over: minutes/hours or at the rate of:			
7. Goal for weight: pounds kilograms			
8. Weigh and record your child's weight every: days <i>(see Appendix A: page 50)</i>			
9. Other pertinent information:			



**Phone the healthcare provider if you have
any questions about this schedule. This
includes questions about the amount of
formula, feeding times, and weight gain, etc.**

Contact Name: _____

Phone : _____

Tube Feed Schedule

Date: _____

Date revised: _____

Time of Day							
Formula & Amount							
Water added to feeding bag							
Water flush before and after feeding							
Medications							
Water before and after medications							

**Write your
child's
information
here.**

Tube Feeding Schedule: *Continuous or Overnight Feedings*

**Keep this page for
your records.**

Date:	Name:		
1. Formula:	Size:	(i.e. ml)	= containers/cans
Formula:	Size:	(i.e. ml)	= containers/cans
Formula provides:	Kcalories	grams of protein/day	ml of free fluid/day
2. Start time(s) of tube feeding:			
3. End time(s) of tube feeding:			
4. Give each feeding over:	minutes/hours or at the rate of:		
5. Flush feeding tube with:	ml of water every:	hours	(use syringe to flush tube)
Wash and rinse the tube feeding bag every four (4) hours throughout the day and night or use an alternate set of bag			
6. and tubing. See page 26 and 27 for complete instructions.			
7. Goal for weight:	pounds	kilograms	
8. Weigh and record your child's weight every:	days	(see Appendix A: page 45)	
9. Other pertinent information:			



Phone the healthcare provider if you have any questions about this schedule. This includes questions about the amount of formula, feeding times, and problems with weight gain, etc.

Contact Name: _____

Phone : _____

Giving Tube Feedings

GENERAL INFORMATION:

- **Wash your hands!** Washing your hands can prevent the spread of illness! Washing your hands is one of the most important steps you can take when caring for your child's tube feed.



When washing your hands please make sure you:



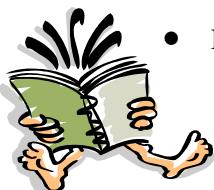
- Remove rings and watch. These can trap germs.
- Use warm water and regular soap and rub all parts of your hands and wrists. Friction is the best way to get rid of harmful germs.
- **Wash for 30 seconds. Hint:** Sing "*Happy Birthday to You*" (the whole song) and 30 seconds will have passed.
- Rinse well. Leave the taps running and dry your hands with a clean towel.
- Turn off the taps with the towel.



- Store unopened containers of formula in a dry place at room temperature. Do not use formula after the expiry date stamped on the container.
- Store opened containers of formula in the refrigerator to help control bacteria that can cause illness. Cover the top of the container and label it with the date and the time it was opened. This helps reduce bacterial growth that can cause illness.
- Throw out unused formula in opened containers after 24 hours. (Mark time and date upon opening.)
- Throw out any formula that has been open or hanging at room temperature for more than 4 hours.
- Throw out any formula that has been hanging in a tube feeding bag for more than the maximum time, see *page 25*. Rinse and wash the bag and tubing. Follow the instructions on *page 26* : “Finishing Up”. Supplies that are not fully cleaned may contaminate the formula and cause illness.



- If possible, the child should be sitting upright in a chair or wheelchair at the table during the feeding and for at least 30 minutes after the feed has finished.
- If feeds are given in bed, make sure that the head of the bed is elevated 30 degrees during the feed and for at least 30 minutes after the feed has finished.
- Flush the feeding tube with water before and after each bolus feeding and when giving medications to prevent a blocked tube. (If the child is 3 months or younger, flush with sterile water).
- Flush the feeding tube with water every four (4) hours during a continuous tube feeding to prevent a blocked tube. (If the child is 3 months or younger, flush with sterile water).
- **Do not** add fresh formula to formula that is already in the bag.



- If using a pump, refer to the instruction booklet given on how to use the pump.

GETTING READY:

Step 1 Prepare a clean work area and wash your hands.

Step 2 Gather the equipment:

- Feeding bag and tube
- Tube feeding formula
- 30 – 60 cc Syringe
- pH paper
- Lukewarm tap water
- Use sterile water for babies less than 3 months of age
- IV pole, coat rack or hook/nail in the wall
- A pump, if using.
- Other: _____



Wash your hands again before touching equipment or your child!

Step 3 If you are reusing a feeding bag, check that it is clean and does not have any leaks. If the bag smells sour or if it is cloudy or has a different colour or just looks dirty, throw it away. Use a new bag and tubing.

Step 4 Rinse the top of the formula container with water and wipe dry. Shake the container well.

Step 5 Open the container(s) of formula.

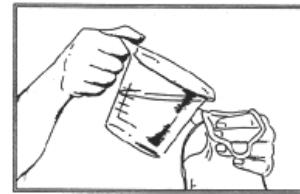


- If the container of formula has been in the refrigerator, allow it to stand at room temperature for 15 – 20 minutes before using or warm in a warm water bath. If the formula is too cold, it may cause cramping.
- **DO NOT microwave** the formula because it breaks down the proteins.



Step 6 Close the clamp on the feeding bag tubing. If using extension tubing, add it to the bottom of the feeding bag tubing.

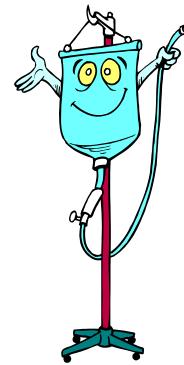
- Step 7** Fill the feeding bag with only enough formula for 4 hours. Refrigerate unused formula in a clean covered plastic or glass container or covered can. On the can or container, mark the date and time the container was opened. After 24 hours, throw out any opened formula that has not been used.²⁶



- Step 8** To prime the tubing (**some infusion pumps will prime the tubing for you**): open the clamp and allow the formula to fill the tubing. Do not fill the drip chamber more than $\frac{1}{2}$ full. Ask your health care provider how to plan for continuous feeds if that is the schedule that is recommended for your child.

- Step 9** When the formula reaches the end of the tube tip, close the clamp. (If using some of the pumps, this is not necessary. Refer to the pump instructions).

- Step 10** Using an IV pole, coat rack, hook or nail in the wall, hang the feeding bag about 18 inches (46 cm) above the stomach.



Formula Hang Times		
<i>Type of formula</i>	<i>If re-using bags and tubing</i>	<i>If not re-using bags and tubing</i>
Ready to Serve Formulas	Maximum 4 hours	Maximum 8 hours
Formulas prepared from powder or concentrate	Maximum 4 hours	Maximum 4 hours
Formula with additives	Maximum 4 hours	Maximum 4 hours
FreshExpressed Breast Milk	Maximum 6 hours	Maximum 6 hours
Previously FrozenExpressed Breast Milk	Maximum 4 hours	Maximum 4 hours

MEAL TIME:

Step 1 The child should be in a comfortable, upright position in a chair or wheelchair. If this is not possible, the child can lie down on a bed with the head of the bed or crib elevated 30 – 45 degrees. With infants, cradling while holding the baby upright in your arms for feeding may work best.

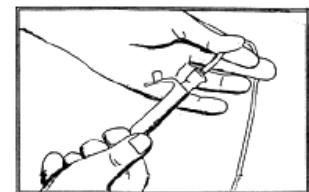


Step 2 Check for the proper placement of the nasogastric tube before every feed. See *page 10* for directions on how to check the placement of the tube.

Step 3 Flush the tube with _____ ml of warm water.

Step 4 Connect the feeding bag to the feeding tube.

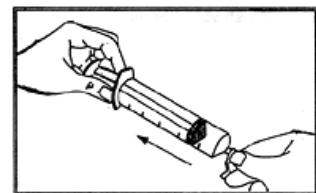
Step 5 Open the clamp on the feeding bag tubing to allow a steady drip. Suggested rate: [redacted]. If a pump is being used, refer to the instructions on how to use the pump.



FINISHING UP:

Step 1 After the formula has finished, close the clamp on the feeding bag tubing and disconnect it from the NG tube. If a pump is used, refer to the instructions on how to use the pump.

Step 2 Using the syringe, draw up [redacted] ml of lukewarm tap water. Use sterile water if your child is less than 3 months of age. Flush the feeding tube. Close the clamp on the feeding tube. If the nasogastric tube is to stay in, close the tube and secure. Alternatively, if the nasogastric tube is removed after the feeding, do this now.



Step 3 First, rinse the feeding bag and tubing with clean cool water. Then wash the feeding bag and tubing (and nasogastric tube if it has been removed and will be used again) with hot soapy water. Use a bottlebrush to get the corners of the bag to remove old formula and prevent bacterial growth. Rinse well with hot water.

Step 4 Shake excess water from the bag and tubing. The goal is to remove as much water as possible. Wrap the feeding bag, tubing, and the nasogastric tube in a clean, dry towel and store in the refrigerator. Storing the bag and tubing in the refrigerator will help to reduce bacterial growth.



Step 5 For continuous feeds the feeding bag and tubing should be cleaned once a day. Many families find it convenient to alternate using 2 feeding bags and tubing. While one set is being cleaned, the other one is ready for use.

You MUST clean the feeding bag AT LEAST once a day.

Step 6 With good cleaning, feeding bags and tubing may be changed twice a week. Never use the bag if it smells sour or is cloudy or "looks dirty". If a pump is used, the feeding bag and tubing may stretch over time and will not infuse the formula at the rate set. If this happens, replace the feeding bag and tubing set.

Step 7 Nasogastric tubes changed every [redacted] weeks.

Note Well: Current recommendations from the manufacturers state that the feeding set is to be changed everyday.

By keeping this equipment extremely clean, it is both practical and economical to change supplies less frequently. Keeping the supplies clean prevents bacterial growth which can cause serious illness. Ask your health care provider for more information.



SYRINGES:

- At least once a day, take syringes apart (separate the barrel from the plunger) and clean in warm, soapy water. Rinse well with hot water.
- Allow syringes to air-dry on a clean surface between uses.
- Change syringes twice a week.

Syringes are changed twice a week.

Giving Medications through a Feeding Tube



GENERAL INFORMATION:

- The correct position of the nasogastric tube must be checked before giving any medications (see *page 10* for directions).
- The tube may be used to give medications. However, if the child is able to take medications by mouth, use this route.
- Not all medications can be safely given with a feeding tube. Check with the primary health care doctor or nurse. If possible, give medications by mouth.
- Do not mix medications with the formula.
- **NEVER** mix other medications with antacids or vitamin supplements containing iron, calcium or magnesium.
- Give each medication separately and flush with water between medications.
- Give medications as directed by the primary health care doctor or pharmacist.
- Use liquid medications when possible to avoid blocking the feeding tube.
- Dilute thick liquid medications such as Phenytoin, Ducosate, Lactulose or certain antibiotics with 5 – 10 ml of water.

If possible,
give
medications
by mouth.



GIVING MEDICATION:

Step 1 Wash your hands.

Step 2 Gather the following items:

- Medication (liquid, tablet or soft gelatin capsule)
- 2 clean syringes: one to check position of the tube and for water flushes, and the other one for medications
- pH Paper
- Lukewarm water in a large cup or sterile water if your child is less than 3 months of age
- Utensil or device for crushing pills

Step 3 If the medication is a liquid, go to **Step 4**. If medication is not liquid read below before going to **Step 4**.

- **If the medication is a tablet**, ask the pharmacist if the medicine can be crushed. If yes, then crush the tablet to a fine powder. Dissolve the powder in one tablespoon of warm water or as the pharmacist suggests. If the medication cannot be crushed, ask the pharmacist if it comes as a liquid.

Liquid
◆
Tablet

Step 4 Draw up [] ml of lukewarm water into the syringe for water flushes. Use sterile water if your child is less than 3 months of age.

Step 5 Draw up the right amount of prepared medication into the second syringe.

Step 6 Check the position of the nasogastric (NG tube) by following the instructions on *page 10*.

Step 7 Attach the water-filled syringe to the NG tube. Open the NG tube and flush it with [] ml.

Step 8 Attach the syringe with medication to the NG tube and push the medication into the tube.

Step 9 Draw up [] ml of water into the water flush syringe and attach it to the NG tube. Flush the NG tube.

Step 10 Remove the syringe and close the NG tube.

Step 11 Wash the syringes in warm, soapy water. Separate the plunger from the barrel of the syringe to wash. Rinse with hot water and place them on a clean surface to air-dry.



Step 12 To give more than one medication, flush the feeding tube with ml of water between each medication. This helps prevent the NG tube from blocking.

Flushing well before and after each medication will help to prevent blocking the feeding tube!

A Note About Flushes:

The amount of water used for flushes can quickly add up. This is an important factor with small babies, especially if there are fluid restrictions. Before you leave the hospital decide with your health care provider the amount of water to use for flushes.

Preventing and Solving Problems (In Alphabetical Order)

ASPIRATION

Aspiration occurs when formula or water enters the lungs. It is a very serious problem as it can cause breathing problems and infection.

Signs

Signs of aspiration:

- Coughing and/or choking while given the feed
- Change in breathing pattern to difficult, noisy breathing
- Rapid shallow breathing
- Wet, gurgly voice
- Pale or bluish lips

Prevention

To prevent:

- Always check to make sure that the nasogastric tube is in the correct place. See *page 10*.
- Sit upright or raise the head of the bed 30 to 45 degrees during each feeding and for 30 to 60 minutes after the feeding is finished.

If you think that aspiration has occurred:

- Stop the feeding right away.
- Ensure the child is sitting upright and that the airway is clear. Babies can be placed on their sides.
- Remove the NG tube.
- If the individual does not improve after taking these steps, call an ambulance (911) right away.

BLOCKED FEEDING TUBE

A blocked feeding tube may occur when:

- The tube is not flushed
- Formula is too thick
- Residue builds up in the tube
- Medications are too thick

Prevention

To prevent:

Prevention is the key!

Flush ◆ Flush ◆ Flush

- Flush tube with warm water before and after feeds and medications
- Crush all medications to a fine powder and dissolve in a small amount of warm water
- **Although flushing is important, for small babies the amount of water used for flushes can quickly add up. This becomes an important factor if there are fluid restrictions. Before you leave the hospital ask your health care provider about the amount of water to use for flushes.**

What to do

If the tube blocks:

- Use a 30 – 60 cc syringe to gently push 20 mls of warm tap water through the tube. For babies less than 3 months of age use sterile water in a syringe. Push up to 10 ml of sterile water through the tube.
- If this does not open the tube, flush with the water and then pull back on the syringe's plunger while it is connected to the tube. Do this 3 – 4 times.

If using warm water does not unclog the tube then try Pancreatic Enzymes to clear:

1. Assemble Equipment
 - a. Cotazyme Capsule (pancreatic enzyme)
 - b. Sodium Bicarbonate – 1 tablet (325mg) crushed to a fine powder
OR $\frac{1}{2}$ teaspoon of Baking Soda
 - c. Warm Water
 - d. 60 ml syringe
 - e. small cup
 2. WASH hands
 3. Draw back as much of the contents of the blocked tube into a syringe as possible.
 4. Place the contents of an opened Cotazyme capsule and a crushed Sodium Bicarbonate tablet or $\frac{1}{2}$ tsp of Baking Soda into a cup. Add 10 – 15ml of warm water and dissolve both medications thoroughly.
 5. Draw up the dissolved solution into the 60ml syringe and try flushing it into the tube. Clamp off the tube for 15 – 30 minutes. Milk the tube to get the solution as close as possible to blocked area.
 6. Unclamp the tube and attempt to flush again with warm water and firm pulling and pushing action. If the tube does not become clear, repeat above steps, leaving the solution for up to one hour.
 7. If two attempts do not clear the tube then most likely the tube will need to be replaced.
- If this does not work, contact the nurse or primary health care doctor for further instructions.

CONSTIPATION

Constipation means that the bowel movements are hard and difficult to pass and occur less often. Each child has his or her own pattern. Some children have one or more bowel movements each day. Others have a bowel movement once every few days. Infants and children who are on tube feeds may not have the same pattern as children who eat orally.

Prevention

To prevent:

- Make sure the recommended amount of water flushes are given.
- Encourage daily physical activity.

If constipation occurs:

- Ask your health care team if a different formula is needed or if more water or diluted prune juice may be needed.
- Medications might be the cause.
- Medications might be needed to help.

Contact the nurse, dietitian or primary health care doctor if:

- Bowel movements are uncomfortable – they hurt.
- Tube feedings are causing bloating, feeling full.
- No bowel movement for more than 3 – 4 days.
- A small amount of bleeding with bowel movements.

DEHYDRATION

Dehydration means that the body does not have enough fluids.

Dehydration can be caused by:

- Vomiting
- Diarrhea
- Sweating – this can be due to hot weather and/or fever

Signs

Signs of dehydration include:

- Dry, sticky tongue
- Sunken eyes
- Cracked dry lips
- Thirst
- Small amounts of dark yellow urine
- Fewer wet diapers
- For infants check for a depressed or sunken fontanelle (soft spot on the head)

Prevention

To prevent:

- Make sure that the recommended amount of formula and water flushes is given each day.

If you think dehydration has occurred:

- Increase the amount water flushes given before, during and between feedings.
- Contact the primary health care doctor or nurse if the symptoms continue for more than [redacted] hours.
- Babies can become dehydrated very quickly. If you think your baby is dehydrated, contact your health care provider immediately. Talk with the doctor or nurse before increasing the amount of water flushes.

DIARRHEA

Diarrhea is frequent, watery bowel movements. Check for signs of dehydration and follow guidelines. See *page 34*.

Prevention

To prevent:

- Give the formula at the recommended rate.
- Make sure all tube-feeding supplies are clean.
- Wash your hands well before giving the tube feeding.
- Make sure the instructions on storing the formula are followed. See *page 22*.
- Do not hang formula for more than 4 hours.
- Do not use formula that has been in the refrigerator for more than 24 hours or that has past the expiry date on the container.
- Ensure the formula is at room temperature before giving.

If diarrhea occurs:

- Call the nurse or primary health care doctor if there are more than 5 watery bowel movements in 24 hours. He/She may suggest a temporary change in the tube feeding for a few days.
- If the diarrhea is **severe** – large amount of loose stools every 1 to 2 hours, call the primary health care doctor if it continues for longer than:
 - 4 hours in an infant under 3 months of age
 - 8 hours in an infant age 3 – 6 months
 - 1 – 2 days in a child age 7 months to 4 years



Check the child's temperature to make sure he or she is not ill. **A fever is an oral temperature above 37.4 C (99.4 F).**

continued...

- Call the primary health care doctor whenever:
 - the temperature is 38.5 C (101.3 F) or higher
OR
 - the temperature is between 37.4 C (99.4 F) and 38.5 C (101.3 F) and the child has had diarrhea for more than 2 days
- Keep a daily record of the number of bowel movements and other symptoms and when they occur.
- Try a slower feeding rate. If the feedings are not tolerated at the recommended rate after 48 hours, call your health care provider.
- Ask if a different formula might help.
- Ask if any of the medications taken might be causing diarrhea.
- If your child is receiving chemotherapy or is neutropenic and develops a fever, contact your doctor or oncologist on call (even if there are no skin signs).



FEEDING TUBE FALLS OUT

Prevention

To prevent:

Follow the instructions on *page 10* to help to keep the tube in place.

If the tube falls out:

- **If you have been taught how to do the procedure,** insert the nasogastric tube. See directions on *page 5*.
- If you have not been taught how to reinser the nasogastric tube then call your nurse or primary health care physician.

STOMACH FULLNESS/BLOATING

Stomach fullness and bloating may be caused by:

- Feeding is given too quickly
- Swallowing air

Signs

Signs of stomach fullness/bloating may include:

- The child may have pain or discomfort in the abdomen. The child may be restless and cry.
- The child may vomit or burp.

Please note:

- Sometimes a bloated, full feeling may indicate constipation.
- See *page 34* for tips on constipation.

Prevention

To prevent:

- Follow the feeding guidelines for the type of formula, rate and schedule

If fullness or bloating occur:

- Decrease the feeding rate.
- Stop the feeding for 1 – 2 hours and then restart the feeding at a slower rate. Slowly increase the rate to the highest rate that is comfortable. If the usual rate cannot be reached, call your health care provider.
- Try to decompress the stomach before feeding. Attach the outside only (barrel) of a 30 ml syringe to the end of the N/G tube. Hold the syringe barrel above the stomach to allow gas to escape for about 5 to 20 minutes. If stomach juices come into the syringe, allow the juices to flow back, by gravity, into the stomach to prevent the loss of electrolytes.

VOMITING

Vomiting or gagging may be caused by:

- Stomach is too full
- Feeding is given too quickly
- Illness

Prevention

To prevent further vomiting:

- Start feeding slowly. After a few minutes, slowly increase the rate to desired rate.
- Position the child in a sitting position in a chair or in a wheelchair or with the head of the bed elevated.
- Allow a quiet time after feeds.
- Vent the tube or burp the child before, during and/or after the feeding. Try to decompress the stomach before feeding.
 - Attach the outside only (barrel) of a 30 ml syringe to the end of the N/G tube.
 - Hold the syringe barrel above the stomach to allow gas to escape for about 5 to 20 minutes.
 - If stomach juices come into the syringe, allow the juices to flow back, by gravity, into the stomach to prevent the loss of electrolytes.
- When flushing the tube, do it slowly.
- If vomiting occurs during a feed, stop the feed. If the child is lying down, turn the head to the side or have them sit up.
- If the vomiting continues and the child seems ill or has a fever, call the nurse or primary health care doctor.

Who to Contact with your Questions & Concerns

Questions Or Concerns About	Contact
Weight: 	<ul style="list-style-type: none">• Dietitian• Nurse• Primary health care doctor
Tube feeding supplies:	<ul style="list-style-type: none">• Nurse• Dietitian
Formula:	<ul style="list-style-type: none">• Dietitian• Primary Health Care doctor
Feeding tube or feeding tube site care:	<ul style="list-style-type: none">• Nurse
Skin problems:	<ul style="list-style-type: none">• Nurse• Primary health care doctor
Tube Feeding at School or Daycare: 	<ul style="list-style-type: none">• Nursing Support Services
Feeding pump:	<ul style="list-style-type: none">• Pump rental store or company
Oral stimulation during tube feeding:	<ul style="list-style-type: none">• Occupational Therapist• Speech-Language Pathologist
Oral Feeding:	<ul style="list-style-type: none">• Dietitian• Occupational Therapist• Speech-Language Pathologist• Primary health care doctor• Nurse



Telephone Numbers

Contact	Name	Phone Number
Dietitian		
Nurse		
Nursing Support Services		
Primary health care doctor		
Occupational Therapist		
Speech-Language Pathologist (SLP)		
Nurse Clinician		
Distribution Center (AHP/HEN)		
Other:		

Appendices

Appendix A: Monitoring Progress

Date	Weight	Feeding Schedule	Concerns/Questions	What to Do?

Date	Weight	Feeding Schedule	Concerns/Questions	What to Do?

Appendix B: Ongoing Questions and Concerns

"How to make the best use of clinic visits or appointments with your child's health care team."

You will have more questions and concerns come up over time. Here are some tips on how to make sure that you have them answered.

At home:

- Keep a journal of your questions and concerns.
- If you want to talk with a certain person at the clinic or office, call ahead to make a set time.
- Ask a family member or friend to come with you to take notes, offer support, or help care for your child while you talk to the health care team.



At the clinic or appointment:

- Ask your most important questions early in the appointment
- Take notes to help you remember what was said.
- Let the team know as much as you can about your thoughts on your child's health and how your child is doing with the tube feeding – you know your child best!
- If you do not understand the medical words used – ask.
- Sometimes a picture can help you to understand what is being said – ask for one.
- Repeat what you think was said to you.

Appendix C: List of Terms

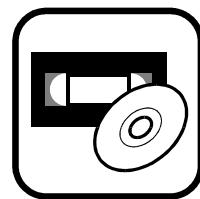
Abdomen	contains the stomach, small and large intestines, liver, gall bladder, spleen, pancreas, and bladder
Aspiration	Fluid entering the lungs
Gastric decompression	Release of air trapped in the stomach (usually by opening the end of the N/G tube and holding it above the level of the stomach)
Gastric outlet obstruction	blockage at the end of the stomach
Ileus	an obstruction or absence of movement in the intestine
Jejunum	the second portion of the small intestine (small bowel)
Laparascopy	surgical procedure that explores the abdomen using a type of camera called a laparoscope
Laparotomy	the surgical opening of the abdomen
Nissen fundoplication	an operation that is used in the treatment of stomach acid reflux into the esophagus
Pyloroplasty	this is an operation where the pylorus muscle is partially divided which enlarges the outlet of the stomach and facilitates gastric emptying
Reflux	backward flowing of a substance (e.g. return of fluids to the mouth from the stomach)

Appendix D: Additional Resources for Families & Caregivers

Books



Videos



Websites



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